NSLS ESH Program Management Review

October 30, 2007

Presented by
Andrew Ackerman

Scope of Discussion

NSLS FY 2007

- ESH&Q Management Systems
- ESH Performance Measures
- Stakeholder Involvement
- Financial Costs

- Targets for FY 08
- Questions / Comments

- **NSLS ESH Management System**
- ESH Performance Measures
- Stakeholder Involvement
- Financial Costs
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ESH&Q Personnel at the NSLS

NSLS Personnel

Manager – Ackerman
Safety Officer – Aloi
ESH Coord – Position accepted
Deputy Safety Officer – Chmiel
Safety Engineer – Klaus
Quality Manager – Buckley
Quality Coordinator – Nielson
Training Coord. – Corwin *(0.50 FTE)*

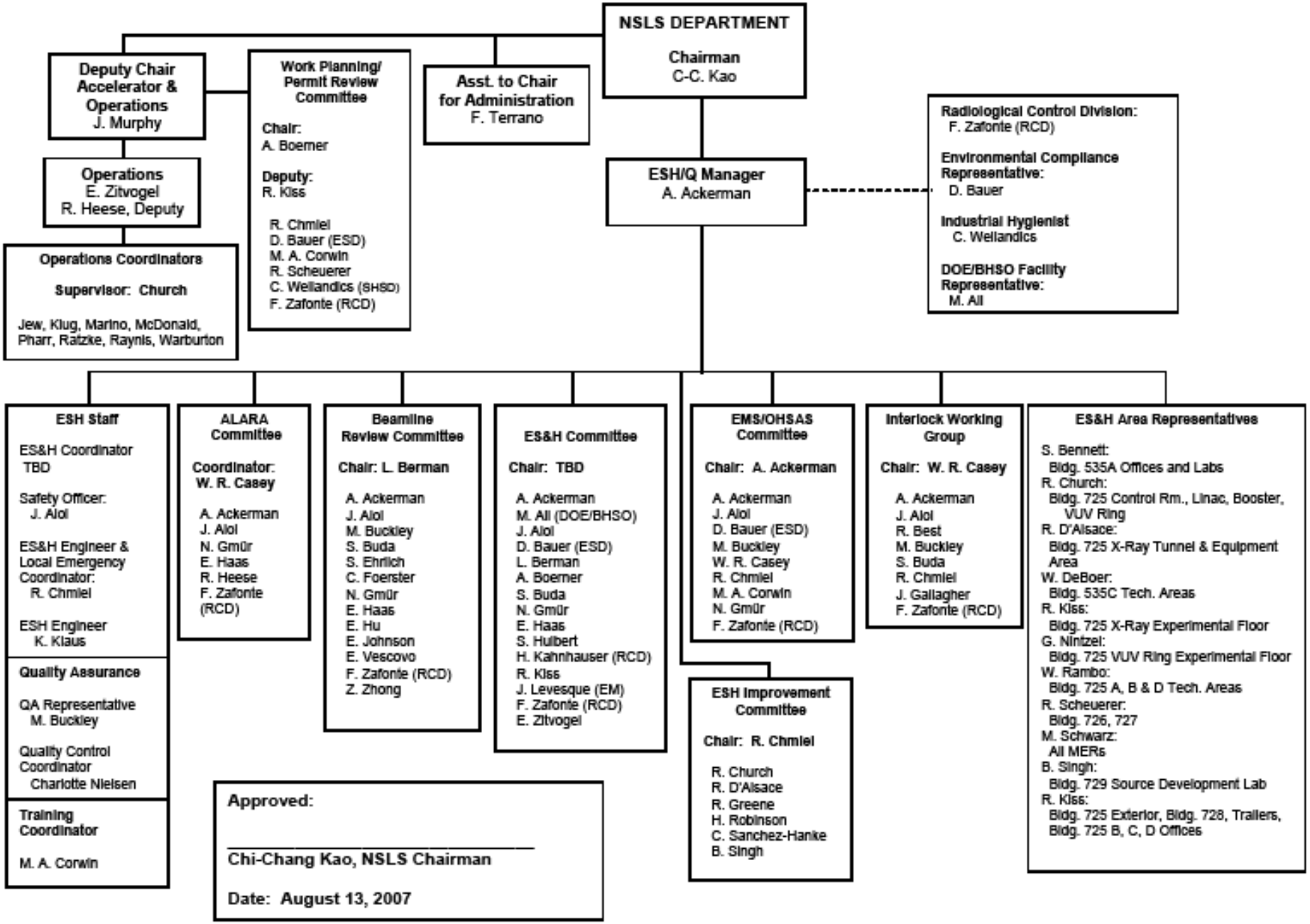
NSLS II Personnel

ESH Manager – Casey *(0.10 FTE)*
ESH Coordinator – Gmur *(0.10 FTE)*
Health Physics – Job *(0.10 FTE)*

Matrixed

FS Rep – Zafonte
RCT – Hayes
ECR – Bauer *(~ 0.30 FTE)*
SHSD Rep – Weilandics *(~ 0.50 FTE)*

NSLS Environment, Safety and Health Organization Chart

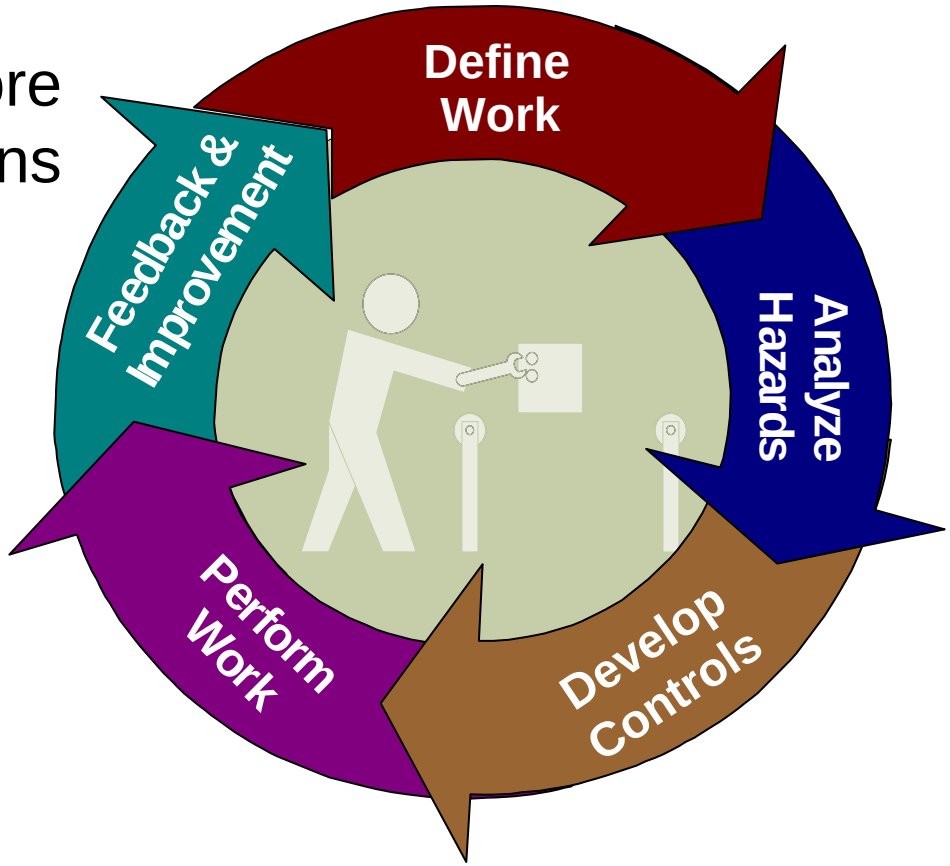


ESH&Q Program Responsibilities

- Emergency planning
- Environmental management
- Experiment safety review
- Hazardous waste management
- Industrial hygiene
- Industrial safety
- Radiation safety
- Self-assessment
- Testing of radiological and laser interlock systems
- Training
- Quality assurance
- Work planning support

All Work is Planned
Integrated Safety Management

Five Core Functions



Line responsibility
Clear roles
Competence=responsibilities
Balanced priorities
ID standards
Controls tailored
Operations authorization

Work Planning
Experiment Review (SAF)
Training
Qualification Matrices
OHSAS
EMS

Overview of EMS Program

- Detailed in the NSLS EMS Manual
- Significant Environmental Aspects:
  - Wastes
  - Chemical storage
  - Liquid discharges
  - Air Discharges
  - * Soil activation
  - * Electrical consumption
  - * Radioactive material
  - * Water use

Aspect activities
Machine shop work
Water systems maintenance
Vacuum pump maintenance
Crystal etching facility
Photographic dark room
Synchrotron operation
Elec/Mech maintenance
Some experiments

* Present but not significant

Overview of OHSAS Program

- Detailed in the NSLS OHSAS Manual
- Task specific risks evaluated for 38 Activities = JRA's
- Facility risks evaluated for 9 topics = FRA's
- JRA's linked with
  - Worker Qualification
  - Work Planning

Worker Qualification Matrices
Defined Tasks

- Strong worker involvement in:
  - Development of qualification matrices
  - Risk assessment
  - Work planning
  - ESH Improvement Committee

Work Planning / Experiment Review

- Work Planning (~ 60 Enhanced Work Plans / Yr)
  - Manager – Boerner (Operations Division)
    - 25 Work Control Coordinators
  - Primary Reviewer – Chmiel

- Experiment Review (~ 1500 SAF's / Yr)
  - Experiment Review Coordinators
    - Aloi (primary)
    - Ackerman
    - Gmur
  - Extended Reviews (2 experiments; Powder gun & NH3)
    - More discussion; written plans
    - Ad Hoc Committee

- NSLS ESH Management System
- **ESH Performance Measures**
- Stakeholder Involvement
- Financial Costs
- Targets for FY 08
- Questions / Comments

ESH Performance Measures

- Progress on ESH Targets
- Results of assessments and audits
- Tier I
- Traffic violations
- Training
- Injuries
- Incidents
- Radiation exposure
- Hazardous waste generation

ESH Performance Measures

- **Progress on ESH Targets (12 total)**
- Results of assessments and audits
- Tier I
- Traffic violations
- Training
- Injuries
- Incidents
- Radiation exposure
- Hazardous waste generation

ESH Target Progress

1) **Establish one meaningful and cost-effective proposal for pollution prevention (P2) at the NSLS and seek to secure funding for implementation.** *(Aloi)*

   Complete: Rydlyme identified; Drum mixer and pH monitor purchased with P2 funding; Neutralization procedure written; So far, 10 drums (4,250 lbs) neutralized.

2) **Evaluate potential for solvent and noise exposure at the NSLS and revise policies and practices as needed.** (*Weilandics/Gmur)*

   Noise: Areas samples at the machine shops; Dosimetry on Utilities Workers; Report soon
   Solvent: One job sampled; report complete
   Policy/Practice revision awaits more monitoring results

ESH Target Progress

3) Accelerate implementation of NRTL program and complete inspection of 30 % of the current equipment inventory. *(Aloi)*

Complete: >90% of 'High Hazard' equipment inspected = 30% of the total. On track for the September 09 deadline. User equipment also being inspected by EEI's.

4) Implement a safety observation process for NSLS managers through the section head level. *(Ackerman)*

Program initiated. All but 2 managers trained. Requirements reduced to Level 3 managers as required by BNL management. 1 hour/month required.

ESH Target Progress

5) Evaluate the NSLS Lab Steward program for wet chemistry labs and revise responsibilities and authorities as needed. *(Ackerman/Chmiel)*

Lab Steward R2A2's completed; Presented to SAC; Lab steward list assembled; Implementation slow; Priority for 2008.

6) Evaluate the BNL Interim Procedure for handling nano-materials and bring the NSLS into compliance with the rules determined applicable. *(Ackerman/Aloi)*

Complete: - 4 issues resolved with the INSAC (coats; transport; med surveillance; HEPA vent); BNL Interim Procedure Updated.

- 1 HEPA vented enclosure installed, balanced, validated; Second HEPA vented enclosure received.

- PASS updated with Nano-question and control requirements; all nano-experiments scrutinized and compliant with second version NSLS rules`

ESH Target Progress

7) **Prepare for and achieve success in the DOE Integrated Safety Management (ISM) assessment scheduled for CY 07. *(Ackerman)***

Complete: Audit well managed; exemplary cooperation; report is flattering; No significant concerns highlighted for the NSLS. Corrective actions will be rolled into 2008 goals.

8) **Complete review of the implications of Part 851 to the NSLS and establish a course of action for bringing the department into compliance with that rule. *(Ackerman)***

Complete: Gap analysis completed.
Corrective action plan developed; 15 Targets defined and assigned with due dates; Tracked in Family ATS

ESH Target Progress

9) Evaluate beam-loss mechanisms during booster extraction; improve extraction efficiency. ***(Shaftan/Casey)***

Studies plan defined. Detector purchased. No measurements taken.

10) Continue development of web-based training needs assessment tool (Chemical/Hazardous Materials, Materials Handling, Machine Shop & Construction Hazards …)**.** ***(Corwin)***

JTA question sets completed; Web page development in process; 12 questionnaire pages complete; implementation will extend into 2008.

ESH Target Progress

11) Capture EMS and OHSAS support documents that require revision control within the NSLS controlled document system. *(Buckley)*

Complete

12) Combine the EMS and OHSAS documentation into a single manual. *(Gmur)*

Common elements identified; Draft, combined manual completed and reviewed; Final document scheduled for completion in October 2007.

ESH Performance Measures

- Progress on ESH Targets
- **Self-assessments and audits**
- Tier I
- Traffic violations
- Training
- Injuries
- Incidents
- Radiation exposure
- Hazardous waste generation

NSLS Self-Assessments (12 Total)

- **Analysis of interim nano-material safety requirements**
- Part 851 gap analysis
- Part 851 pressure safety gap analysis
- Lock Out / Tag Out assessment
- Personnel protection interlock assessment
- Personnel protection interlock reliability analysis
- ISM self-assessment
- Review of Be use forms (BURF)
- Review of electrical equipment brought by vendors during User Meeting
- Drill and critique of department local emergency response
- JRA's; FRA's; EMS process assessments
- JTA annual review

BNL & Other Audits (20 Total)

- **BHSO**
  - **Laser assessment**
  - **DOE Material Handling Assessment**
  - **Assessment of electrical safety corrective action plans**
  - **Extent of Condition for DOE regarding Electrical Installations review**
  - **Ventilation audit**
- **DOE**
  - **ISM**
  - **Safeguards and Security Survey of BNL**
  - **Inspector General radioactive activation audit**
  - **Inspector General audit of nanotechnology safety**
- **BNL**
  - **RCD Assessment of Shielding Policy and Implementation**
  - **Electrical systems interlock assessment**
  - **SHSD assessment: investigating incidents, accidents, and injuries.**
  - **SHSD multi-topic assessment; EWMSD multi-topic assessment**
  - **Triennial Assessment; Radiation Generating Devices**
  - **Independent Oversight and Assessment Office: Conduct of Ops follow up to 2003 audit**
  - **Confined Space Program Review**
  - **Laser Medical Surveillance**
- **External**
  - **Extent of Condition Review; Calibration Program**
  - **EMS/OHSAS Registration Audit**

NSLS Nano-science Safety Requirements; Revision 02

Prepared by Andrew Ackerman & John Aloi on 10/4/2007

	Solid materials with imbedded nanostructures (Nano-patterns)	**Solid nanomaterials with nanostructures fixed to the material's surface**	**Nanoparticles suspended in liquids**	**Dry, dispersible (engineered) nanoparticles, nanoparticle agglomerates, or nanoparticle aggregates**
PPE Requirements for Handling	Standard PPE required for the work area. No additional PPE is needed for this nanomaterial work.		Standard PPE required for the work area plus: •Gauntlet-type nitrile gloves "or" wrist length disposable nitrile gloves with extended sleeves •Eye protection: Safety glasses with side shields for handling powders only. Chemical splash goggle for handling either powders or liquids.	
Handling Requirements	•For work outside of a HEPA filtered exhaust hood: o No Mechanical abrasion. o No thermal stresses o Cover samples when practical to protect the sample, e.g., (slide cover) •Store in sealed container when not in use.		•Volumes must be limited to the milliliter range (<200 ml) and manipulated within a HEPA filtered laboratory exhaust hood over adsorbent paper to capture any spills. •Exhaust hood work surfaces must be wiped with a dampened adsorbent paper towels at the completion of the experiment (aqueous soap solution). •Procedures that involve particle aerosol formation are PROHIBITED.	•Total particle masses must be limited to the milligram range (<200 mg) and be manipulated within a HEPA filtered laboratory exhaust hood over water soaked absorbent paper to capture any spilled materials. •Exhaust hood work surfaces must be wiped with a dampened adsorbent paper towels at the completion of the experiment (aqueous soap solution). •When ejecting samples from a capillary, that sample must be directed to water for capture. Compressed nitrogen (< 5 psi) or other inert gas must be used to eject the sample from the capillary tube. A covered beaker is best to contain any splash. This must be completed within a laboratory HEPA exhaust hood. •Nano-scale materials brought to the beam line must be: Sealed within a sample holder, a capillary tube, or with at least two layers of Kapton, Mylar or cellophane tape. Only sealed containers are allowed at the beam lines for storage during an experiment. o Experiments that involve gas flow over particles must include a water scrub of the gas exhaust to provide a final barrier to particle loss.
Spill Response	N/A		Powder spills within an exhaust hood can be cleaned by using paper towels and an aqueous soap solution. Liquid spills within a hood can be cleaned with paper towels and then wiped with an aqueous soap solution. For spills outside of an exhaust hood, control access to the area and immediately notify the Operations Staff by calling the Control Room at x2550.	
Posting Requirements	No posting requirements.		The required nanomaterials caution sign can be found here (http://www.nsls.bnl.gov/esh/SAF/nano_sign.pdf) , please post a sign at each designated nanomaterials workstation (i.e. beam line hutch and laboratory exhaust hood) for the duration of your experiment.	

<table>
<tr><th></th><th>Solid materials with imbedded nanostructures
(Nano-patterns)</th><th>Solid nanomaterials with nanostructures fixed to the material's surface</th><th>Nanoparticles suspended in liquids</th><th>Dry, dispersible (engineered) nanoparticles, nanoparticle agglomerates, or nanoparticle aggregates</th></tr>
<tr><td>Labeling of Containers</td><td colspan="4">Follow the labeling requirements list below in the "Transportation & Labeling Requirements" section. Labels are available in the NSLS Stockroom.</td></tr>
<tr><td>Transportation & Labeling Requirements</td><td colspan="4">Packaging:
1.Inner containers must be a tightly sealed, rigid, and leak proof. Use tape on the cap to prevent the container from being unintentionally opened.
2.Place the inner container in a >=6 mil plastic bag.
3.The outer package (sealed cardboard box "or" sealed plastic container) must be filled with absorbent material to protect the inner container and absorb liquids during an inner container failure.
Any nanomaterial that meets the definition of hazardous materials according to 49 CFR 171.8 (http://a257.g.akamaitech.net/7/257/2422/12feb20041500/edocket.access.gpo.gov/cfr_2004/octqtr/pdf/49cfr171.8.pdf) or has known hazardous properties (toxic, flammable, reactive) must be shipped according to the NSLS Shipping Requirements (http://www.nsls.bnl.gov/esh/safety/shipping.htm) for Hazardous Materials

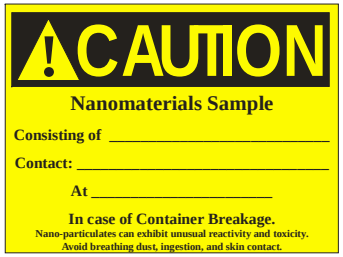
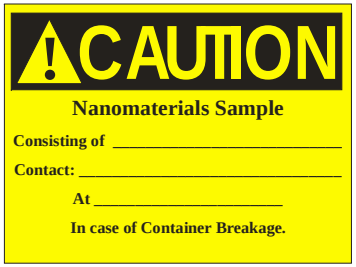
Other nanomaterials may be carried in private vehicles when labeled and packaged as follows:
The inner package must be labeled as follows (Labels are available in the NSLS Stockroom):
Figure 1: for particulates
 

Figure 2: for non-particulates
 
</td></tr>
<tr><td>Waste Management Requirements</td><td colspan="4">All waste in contact with nanomaterials must be disposed as hazardous waste e.g.,(swabs, Kim wipes, blotter paper, beakers, flasks, tape, sample holders). Chemicals containing nanomaterials must NOT be released to the sink or disposed in the regular trash.
1.Waste containers:
a.Liquids: Must be stored in a rigid leak proof container.
b.Particulates: Must be stored in a rigid leak proof containers "OR" >=6 mil plastic bags.
2.Satellite Accumulation Areas:
a.Liquids: Must be stored in a secondary tray on the bench top or in a HEPA exhaust Hood.
b.Particulates: Must be stored in a secondary container inside the designated nanomaterials HEPA filtered exhaust hood. Waste must be placed into a clean secondary bag, within the HEPA exhaust Hood, before transferring to the 90-day area.
3.Waste container labeling (Red Hazardous Waste Label):
a.NO formulas, spell out the chemical name.
b.The contents line on the label must contain the chemical composition and the word "NANOMATERIALS".
c.A second label, in addition to the Red Hazardous Waste Label, is required on the outside of the bag stating "CONTAINS NANOMATERIALS".</td></tr>
</table>

The ISM Audit
A Tremendous Success !!

Department / Division	Define Scope of Work	Analyze Hazards	Develop and Implement Controls	Perform Work Within Controls
NSLS	Effective Performance	Effective Performance	Effective Performance	Needs Improvement
Small Science	Effective Performance	Needs Improvement	Needs Improvement	Needs Improvement
Maintenance	Effective Performance	Needs Improvement	Needs Improvement	Needs Improvement
Construction	Effective Performance	Needs Improvement	Needs Improvement	Effective Performance

Feedback and Continuous Improvement

BNL	Needs Improvement
DOE Site Office	Needs Improvement

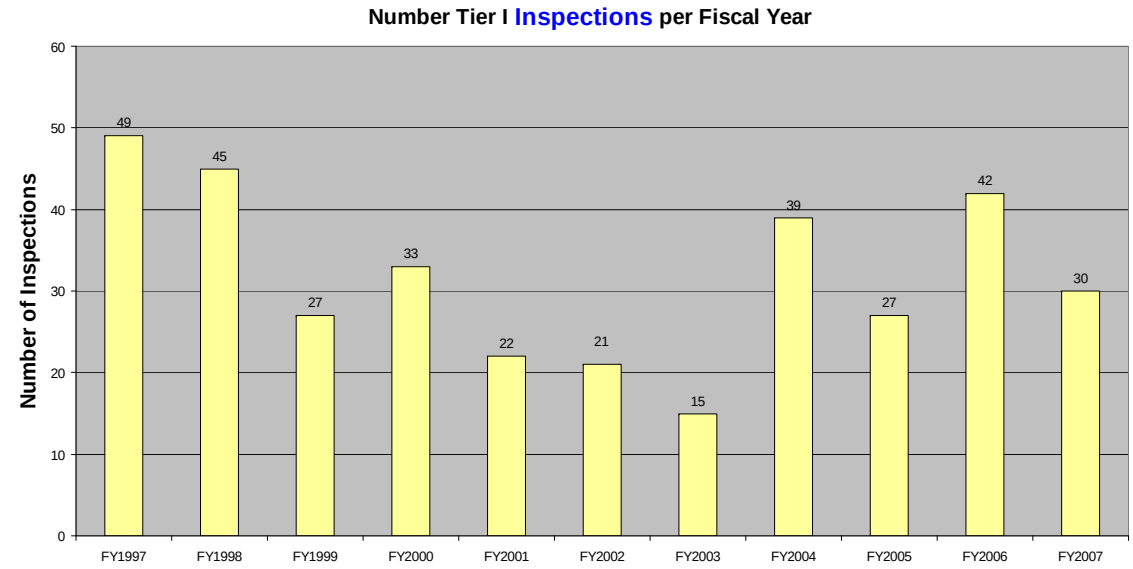
Could have had another **GREEN** for Feedback & Improvement

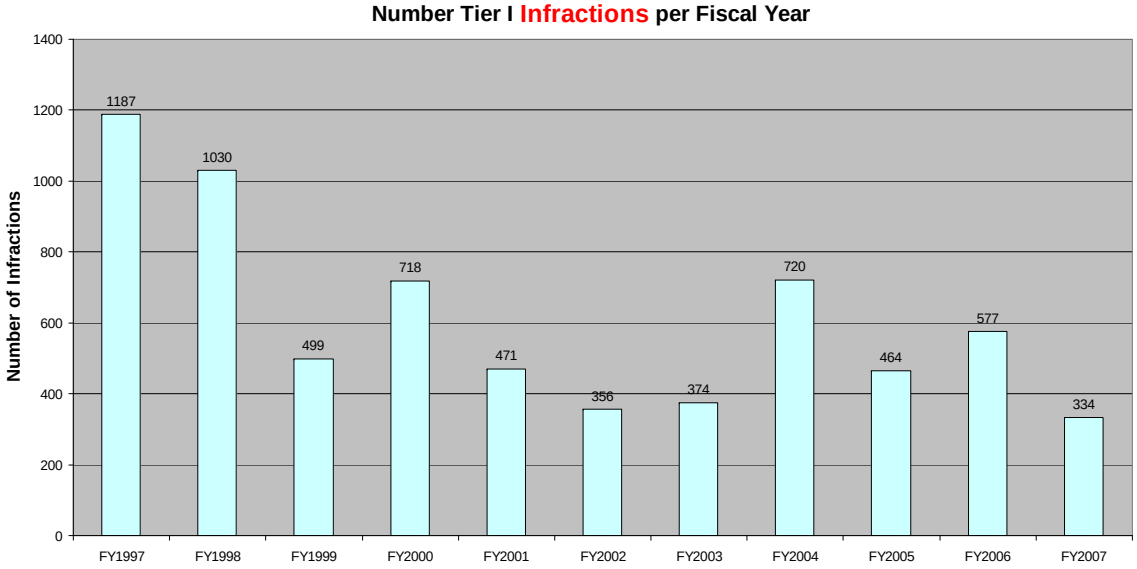
Assessment and Audit
Summary

- No need to increase audit frequency or number!!
- Significant resource needed to meet audit requirements
- Internal assessments are most effective

2006 ESH Performance Measures

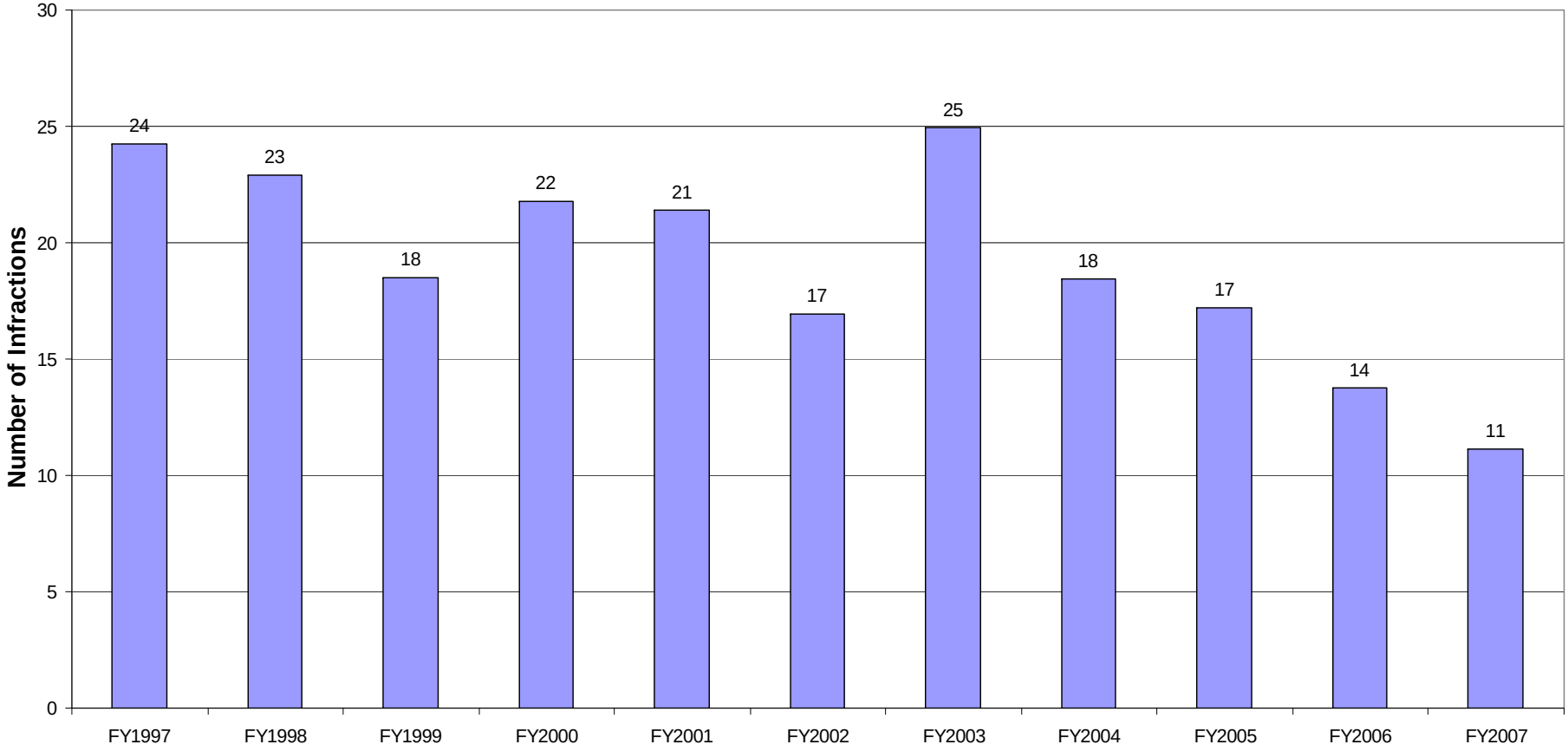
- Progress on ESH Targets
- Results of assessments and audits
- **Tier I**
- Traffic violations
- Training
- Injuries
- Incidents
- Radiation exposure
- Hazardous waste generation



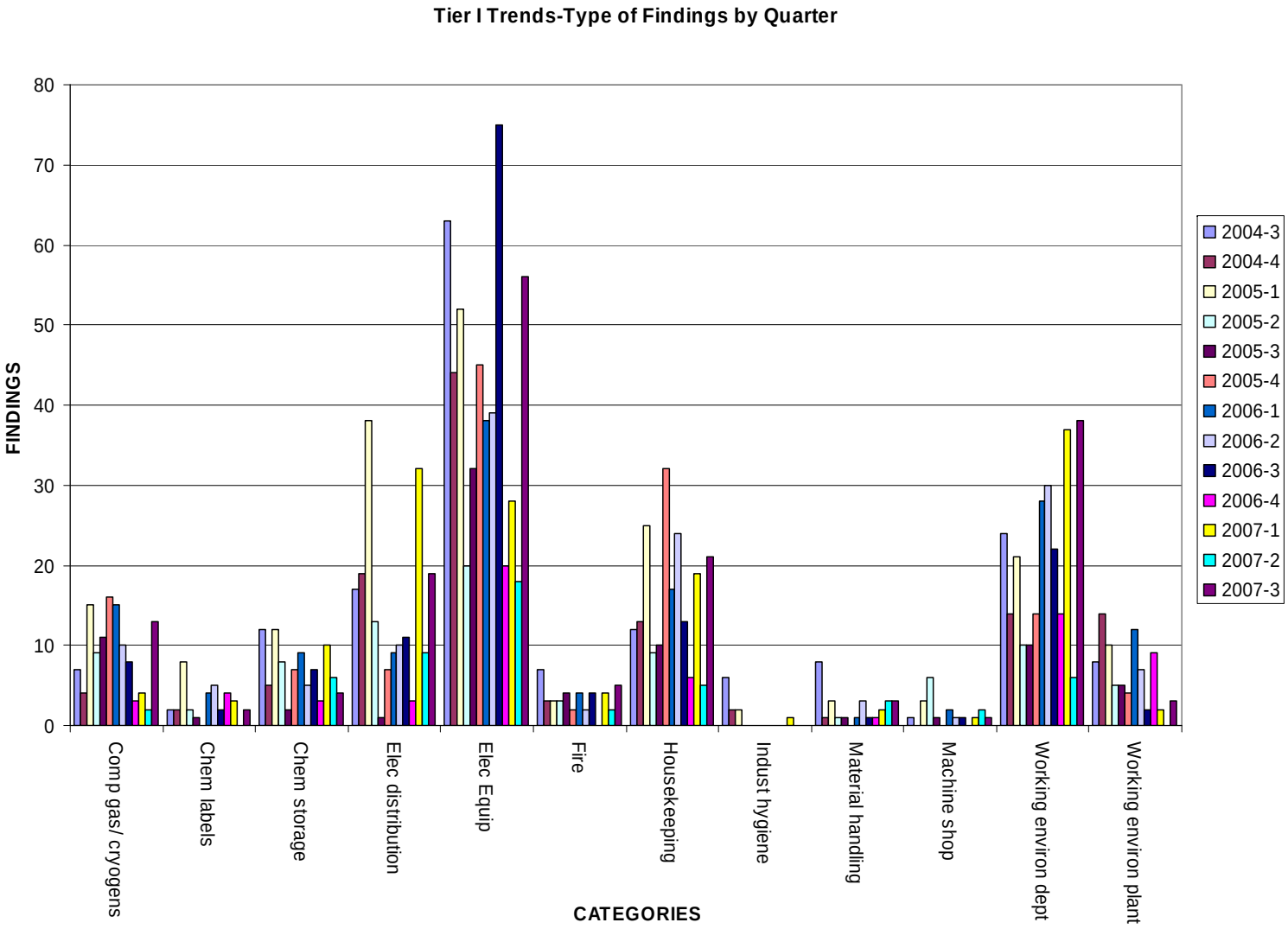


- Findings proportional to inspection number

Number of Infractions per NSLS Tier I Inspection

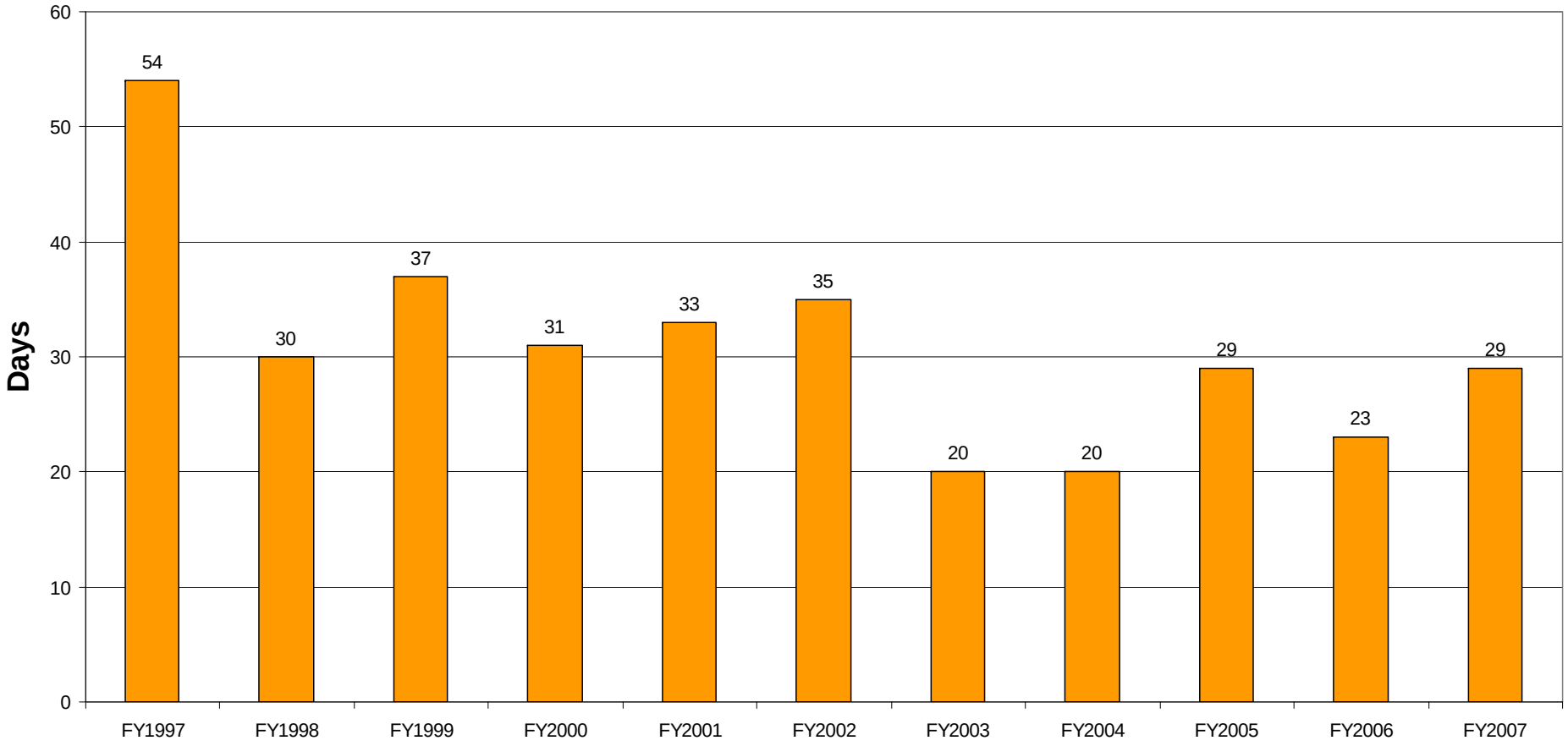


- 03 – 07: Downward trend
- Management emphasis on safety
- New staff = new rigor, adequate resource



- Electrical findings persist

Turnaround Time From Notification to Correction of Infraction



- Consistent since 2003

Tier I Summary

- Comprehensive review of work locations through-out the department
- Expert core team and involvement with staff
  - 10 Area representatives assigned
  - Inspection notices to NSLS, BNL, and DOE staff
- All findings are assigned and tracked until closed.
  - Detailed reports; successive notification; review of past findings; action plans
- Excellent trending

Conclusion:

- Program is exemplary
- Adequate resources assigned

2006 ESH Performance Measures

- Progress on ESH Targets
- Results of assessments and audits
- Tier I
- **Traffic violations**
- Training
- Injuries
- Incidents
- Radiation exposure
- Hazardous waste generation

Traffic Tickets Received
NSLS Related Personnel

23 tickets in 2007

(32 in 06)

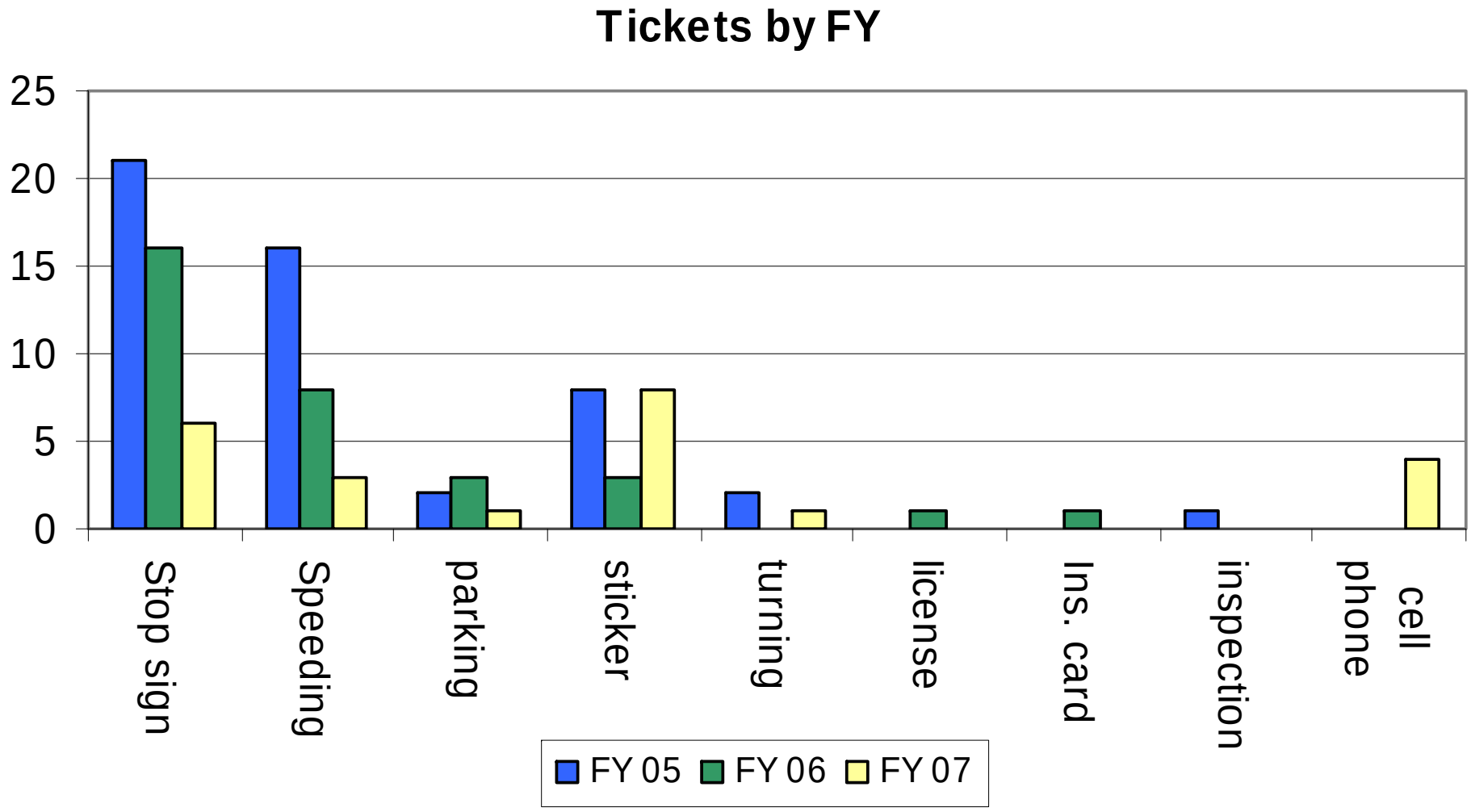
(50 in 05)

Personnel

- ***12 staff members***
- 4 short-term users
- 2 long term users
- 1 spouse

Type

- 6 – fail to stop sign at stop sign
- 3 – speeding
- **8 – invalid BNL sticker**
- 1 – parking
- 4 – talking on cell phone
- 1 – illegal U-turn

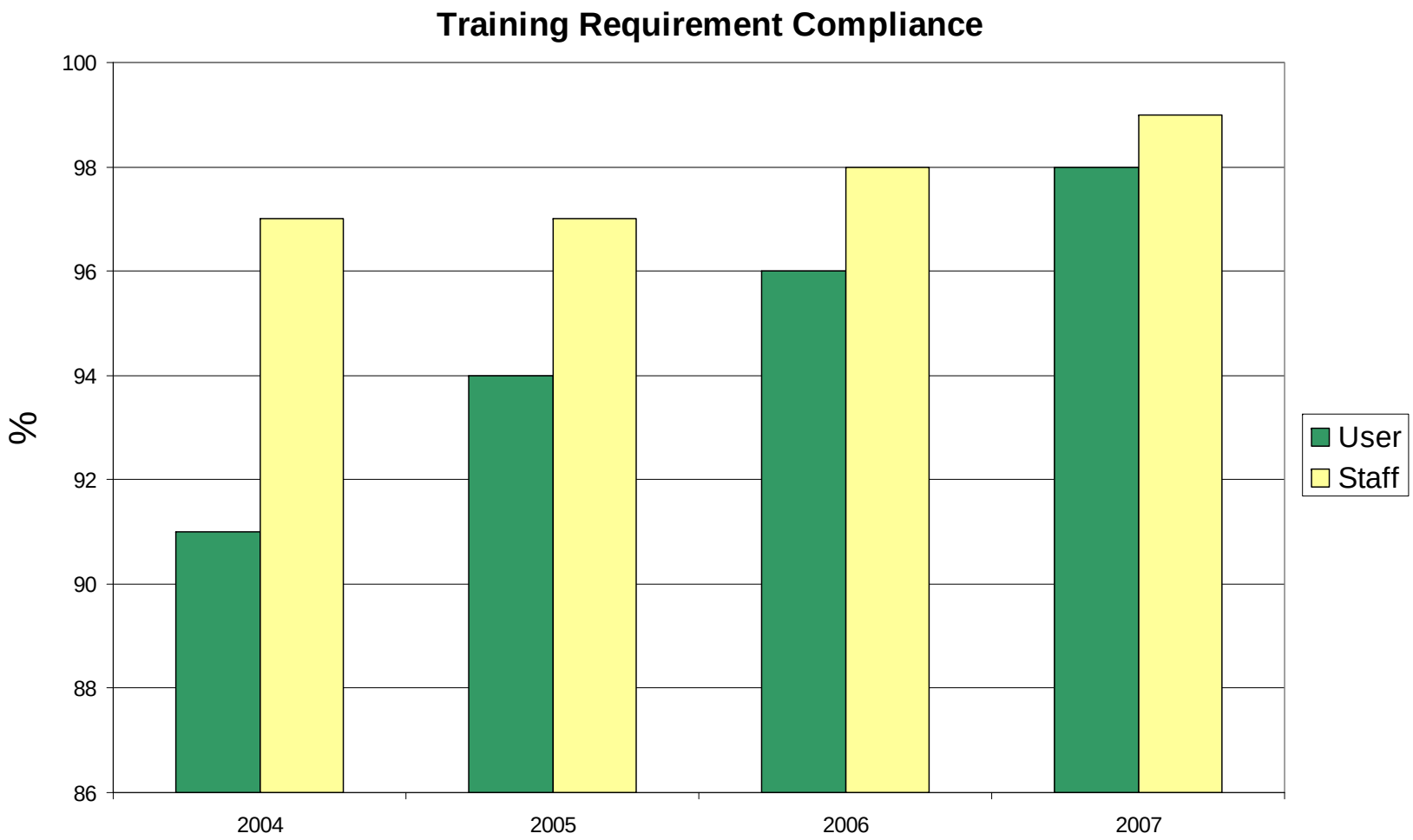

Tickets by FY
25
20
15
10
5
0
Stop sign
Speeding
parking
sticker
turning
license
Ins. card
inspection
phone
cell
FY 05
FY 06
FY 07

2006 ESH Performance Measures

- Progress on ESH Targets
- Results of assessments and audits
- Tier I
- Traffic violations
- **Training**
- Injuries
- Incidents
- Radiation exposure
- Hazardous waste generation

Training Improvements

- JTA's improved: assign only pertinent training requirements
  - 12 web based question sets developed = collect accurate information
- BLOSA upgrade in progress
  - Database question set
  - Customized to beam line
  - Improved configuration control
- Contractor screening improved
  - Notification from main gate and Guest Information System
- User science screening improved; experiment review email



FY 07 Staff Course Requirements: 4464
FY 07 User Course Requirements: 1451

- Compliance is excellent
- Aggressive tracking & thoughtful assignment works

2006 ESH Performance Measures

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- **Injuries**
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Five Injuries

- 3 “First Aid” cases; hurt fingers
  - Cut on electronics rack
  - Bumped on compressed gas bottle
  - Bumped on shifting beam line chamber
- 1 “OSHA Recordable”
  - Fall on stairs
- 1 “DART”
  - Bumped elbow

- Each investigated
- Corrective actions; Family ATS

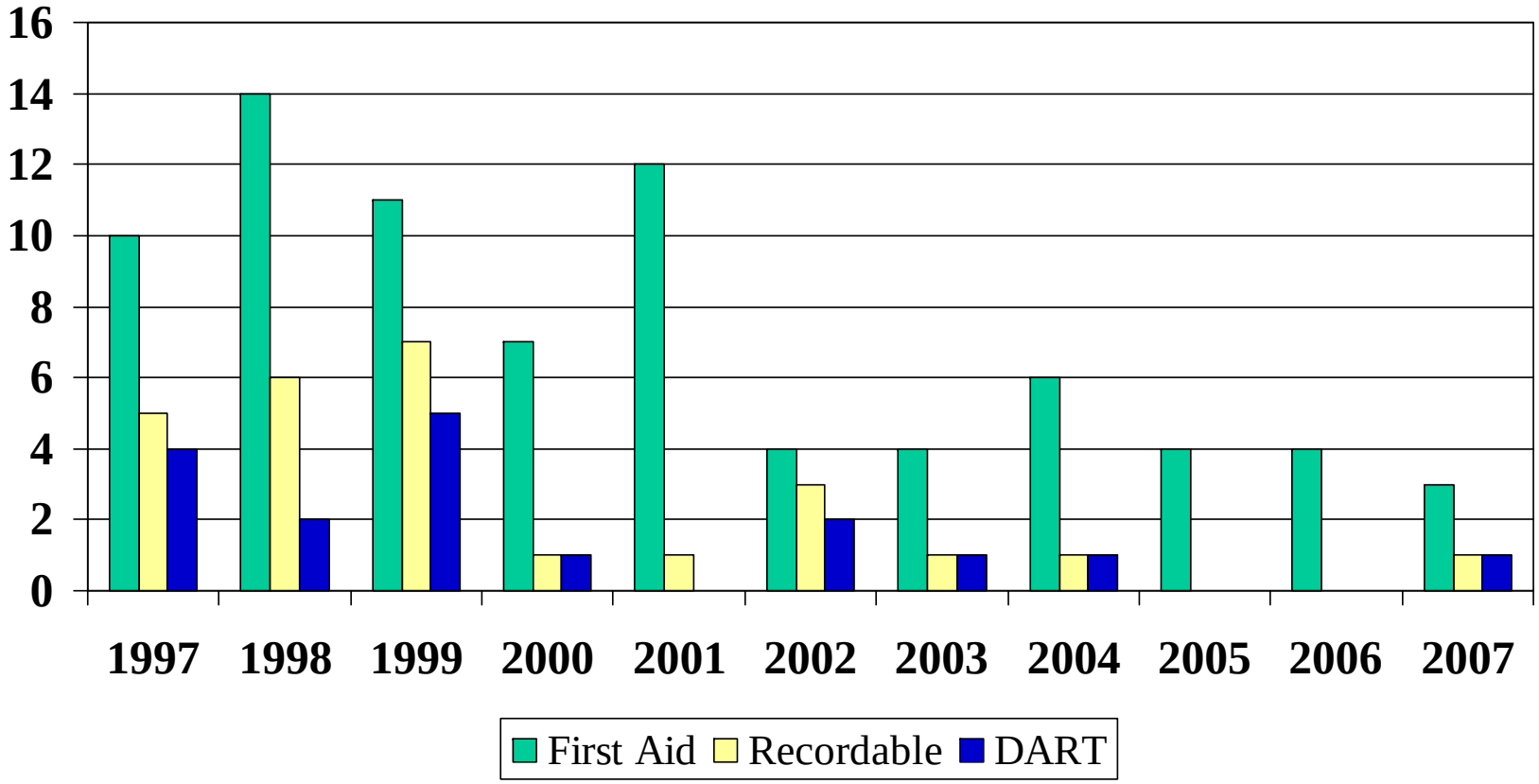
Common Life Injuries

- NOT the result of poor planning
- Awareness and constant vigilance`

- Newsletter articles
- Safety moment
- Contractor briefing

NSLS Injury Cases

FY 97 to FY 2007



Injuries must be reported!!!

We are working to stop injuries

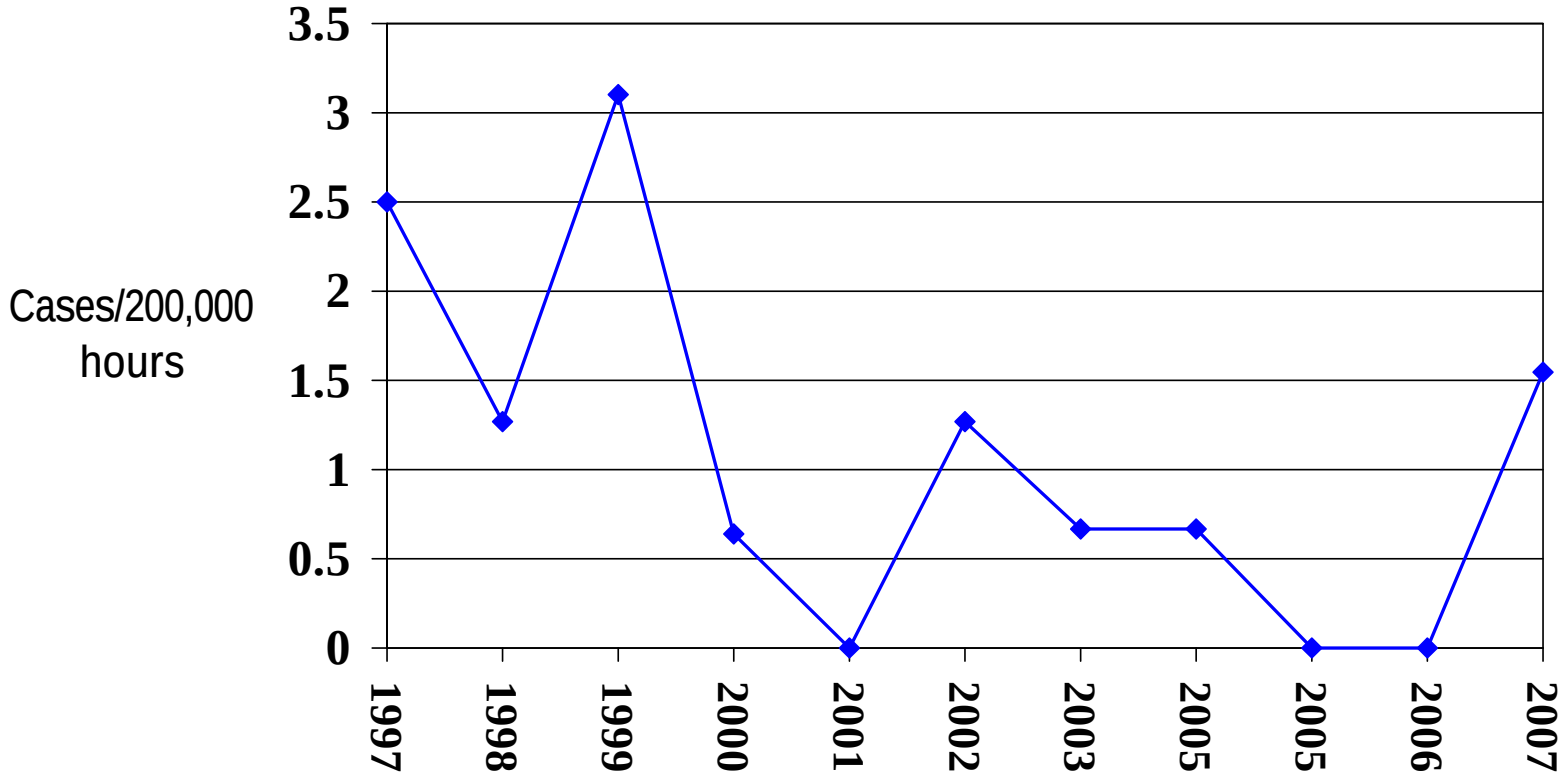
We are not trying to stop reporting

No DART 05, 06

BROOKHAVEN NATIONAL LABORATORY

NSLS Staff Only

DART Rate



- Trend is down
- No DART for 05, 06

2006 ESH Performance Measures

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- Injuries
- **Incidents**
- Radiation exposure
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Incidents

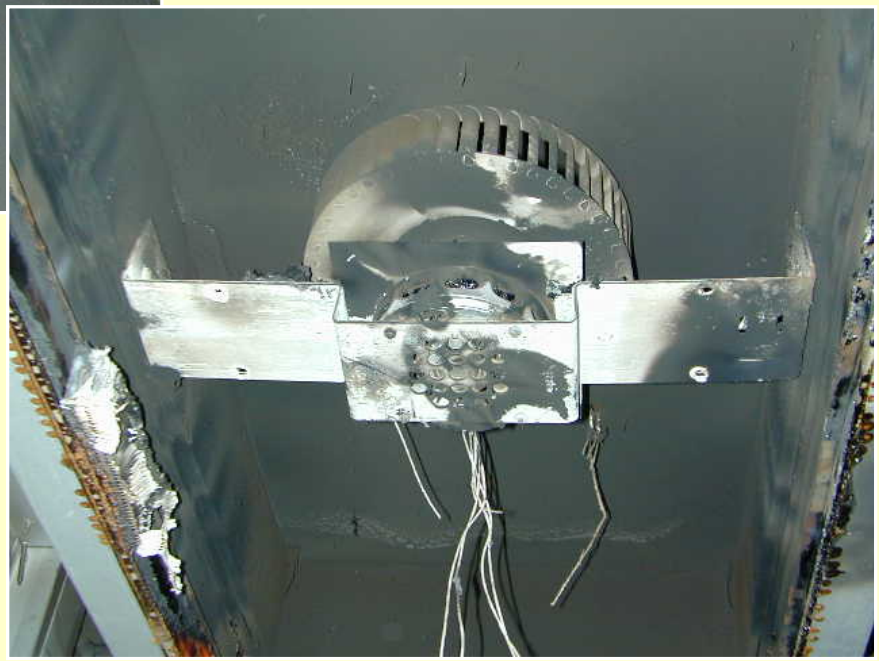
- Events
  - Propylene glycol spill; SDL
  - Laser issue; SDL endstation
  - Experiment floor flood
  - Water leak to ion gauge controller
  - Smoke conditions:
    - 480 V, 600 amp fuse
    - Compressor belt

- Each investigated
- Corrective actions; Family ATS

- ORPS; SCBNL
  - SDL laser room fire; exhaust fan
- Radiological Awareness Report
  - Radiation Generating Device moved to NSLS without registration update
- J-Lab laser incident; guest review; lessons learned

- All 3 replaced
- No others at NSLS
- BNL Electrical Safety Committee review

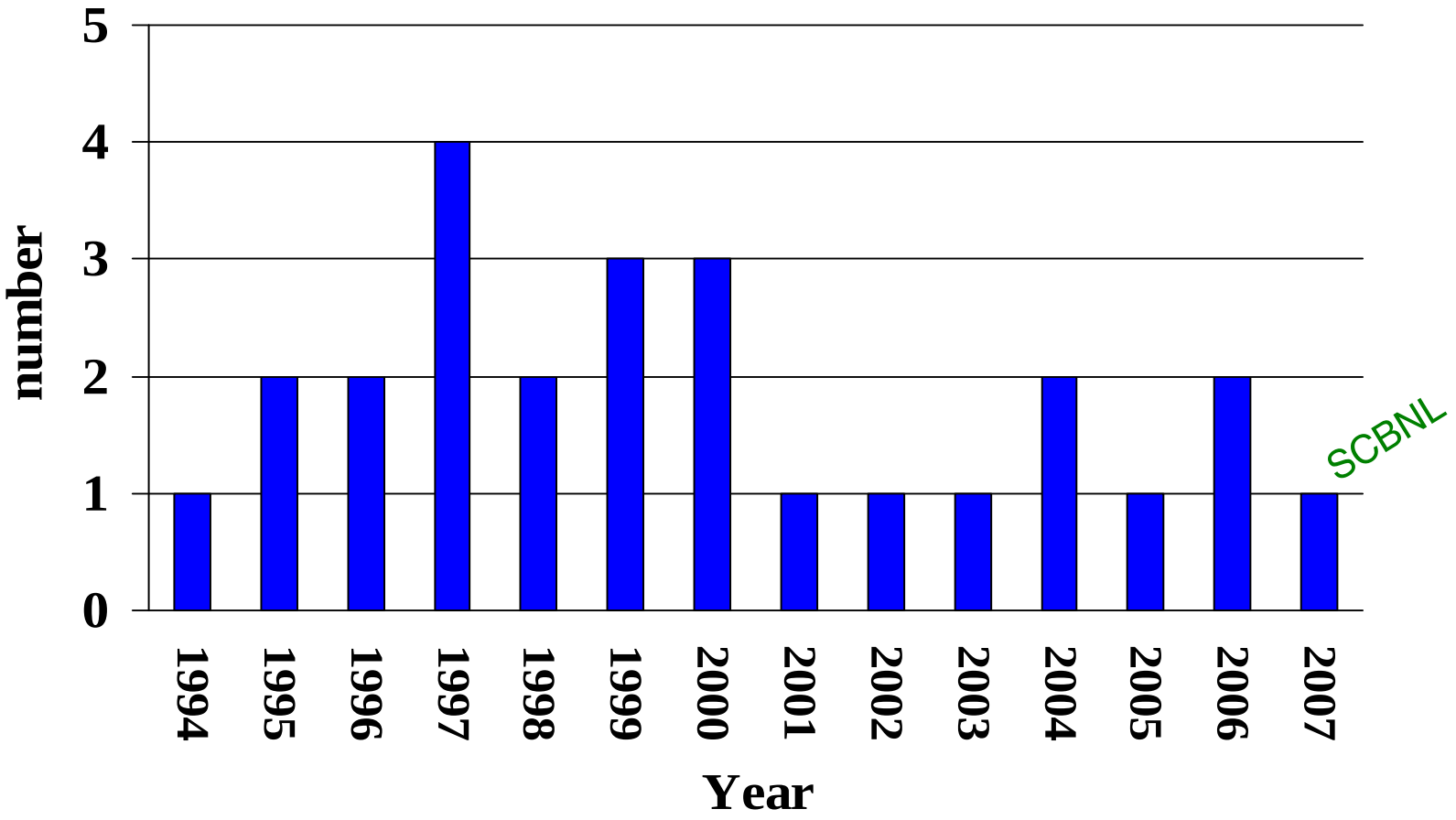
SDL Fire



SCBNL ORPS

- Investigated
- Lessons Learned written
- All replaced; new UL listed unit

ORPS Events; FY1994-2007



Incident Summary

- All incidents rigorously investigated
- We support the Laboratory emphasis on incident/event investigation and reporting
- Event categorizers have done a good job; thoughtful & analytical
  - They need continued support

2006 ESH Performance Measures

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- **Radiation exposure**
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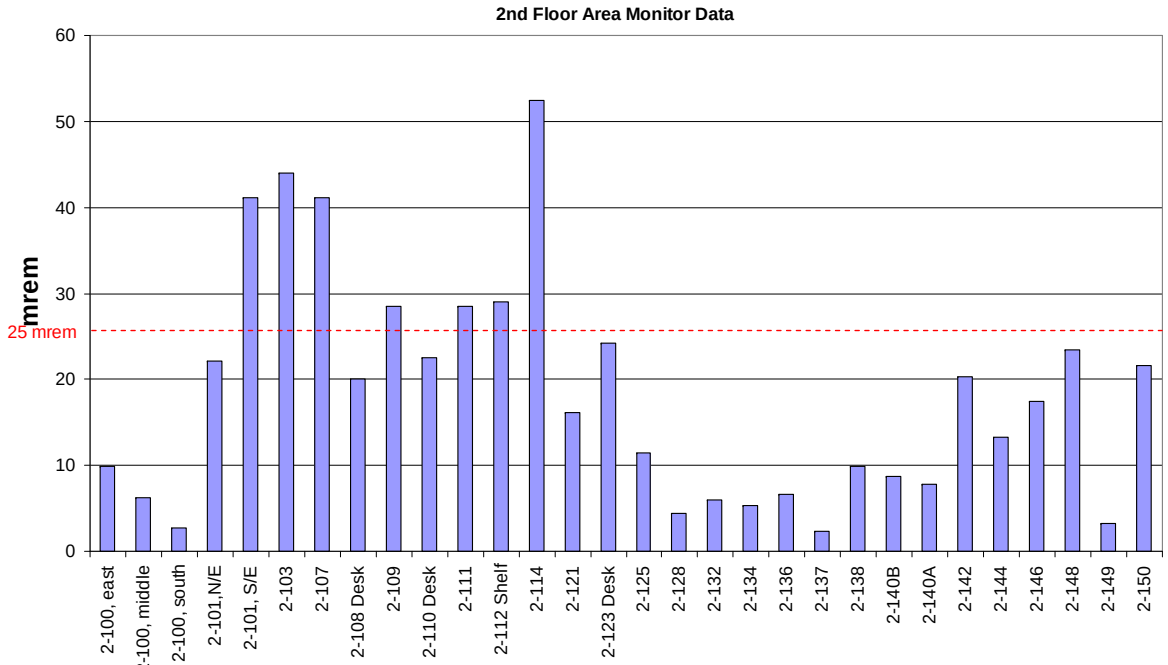
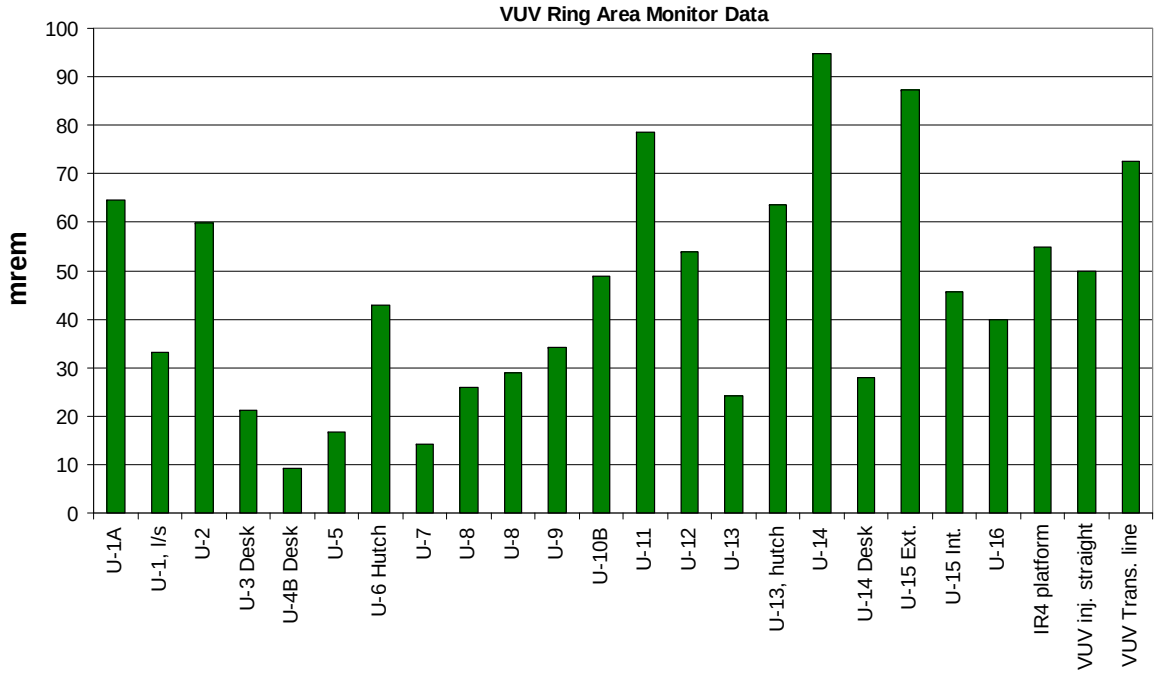
Radiation Monitoring

- Dose to personnel very low
  - Collective dose (through 07/2007) = **33 mRem** (Neutron)
  - Distributed over 1,998 badges (monthly turnover)
- Area monitoring continues
  - 25 Chipmunks
    - Read out and alarm; locally and in the control room
    - History files
  - ~60 TLD's distributed throughout the facility
- Administrative controls in place
  - Scheduled injection
  - Announce injection
  - Posting
  - Interlocked enunciators in problem areas
  - Operations response procedure (Chipmunks)

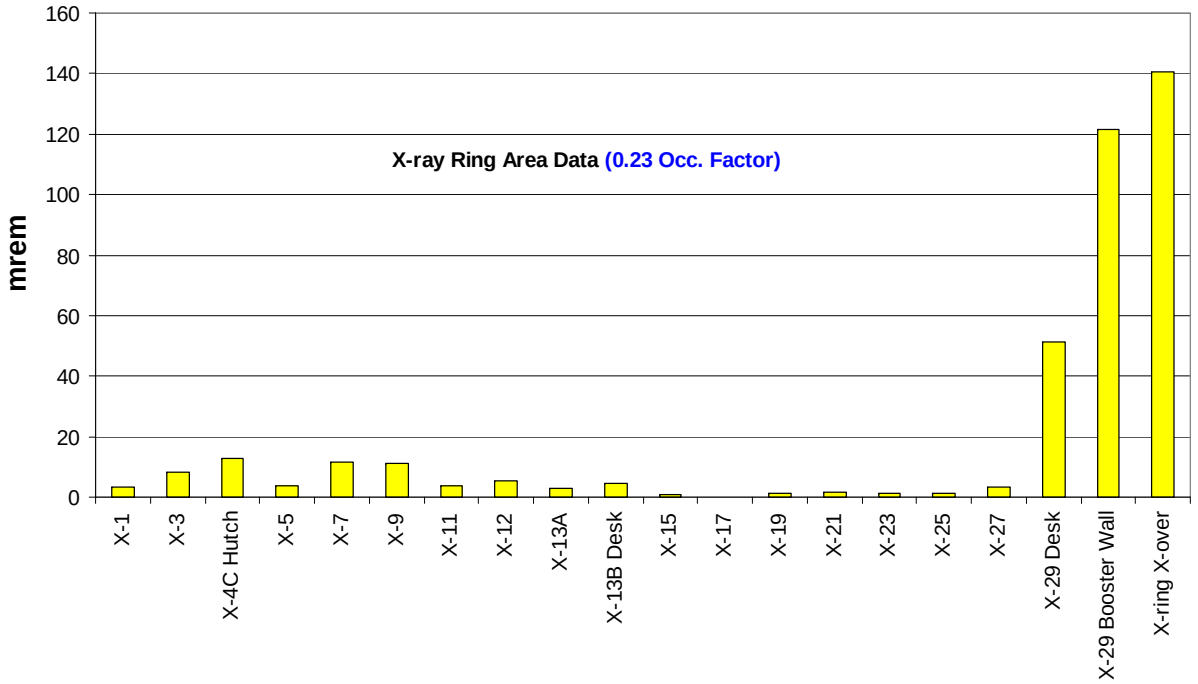
- Levels can be significant
- Pattern well defined
- Injection dominates

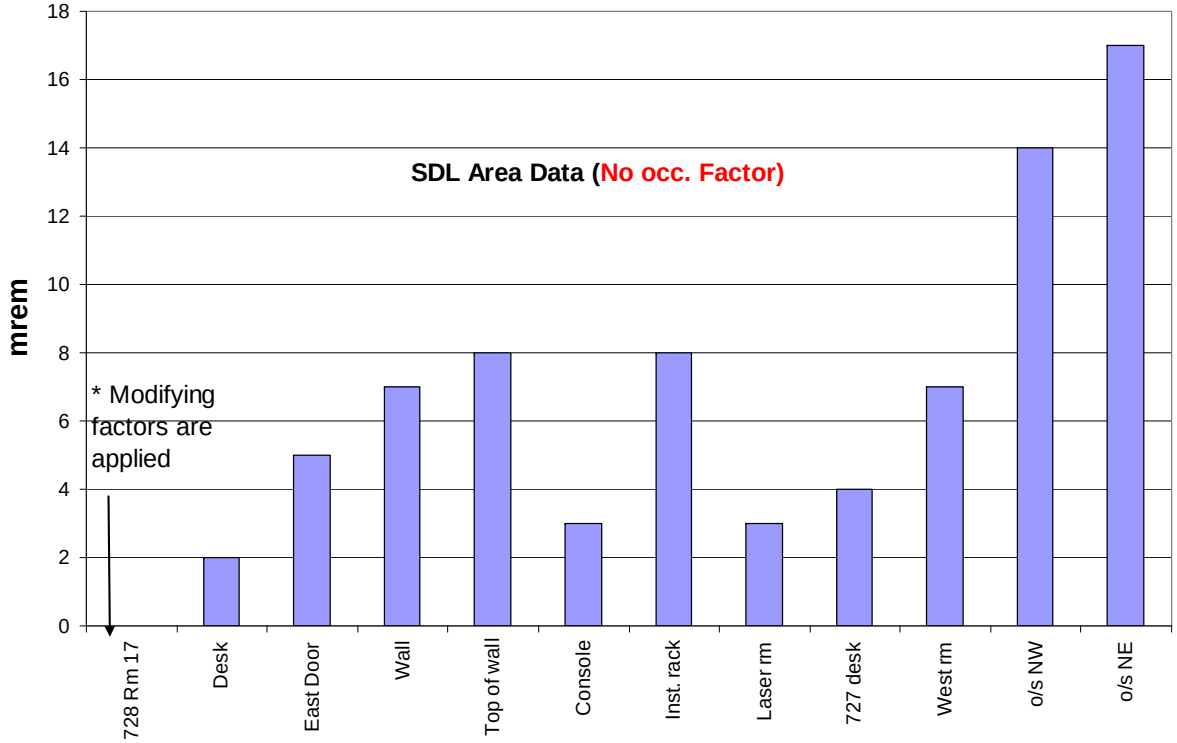
Dose through
June 2007
(0.23 Occ. Factor)





Dose through June 2007

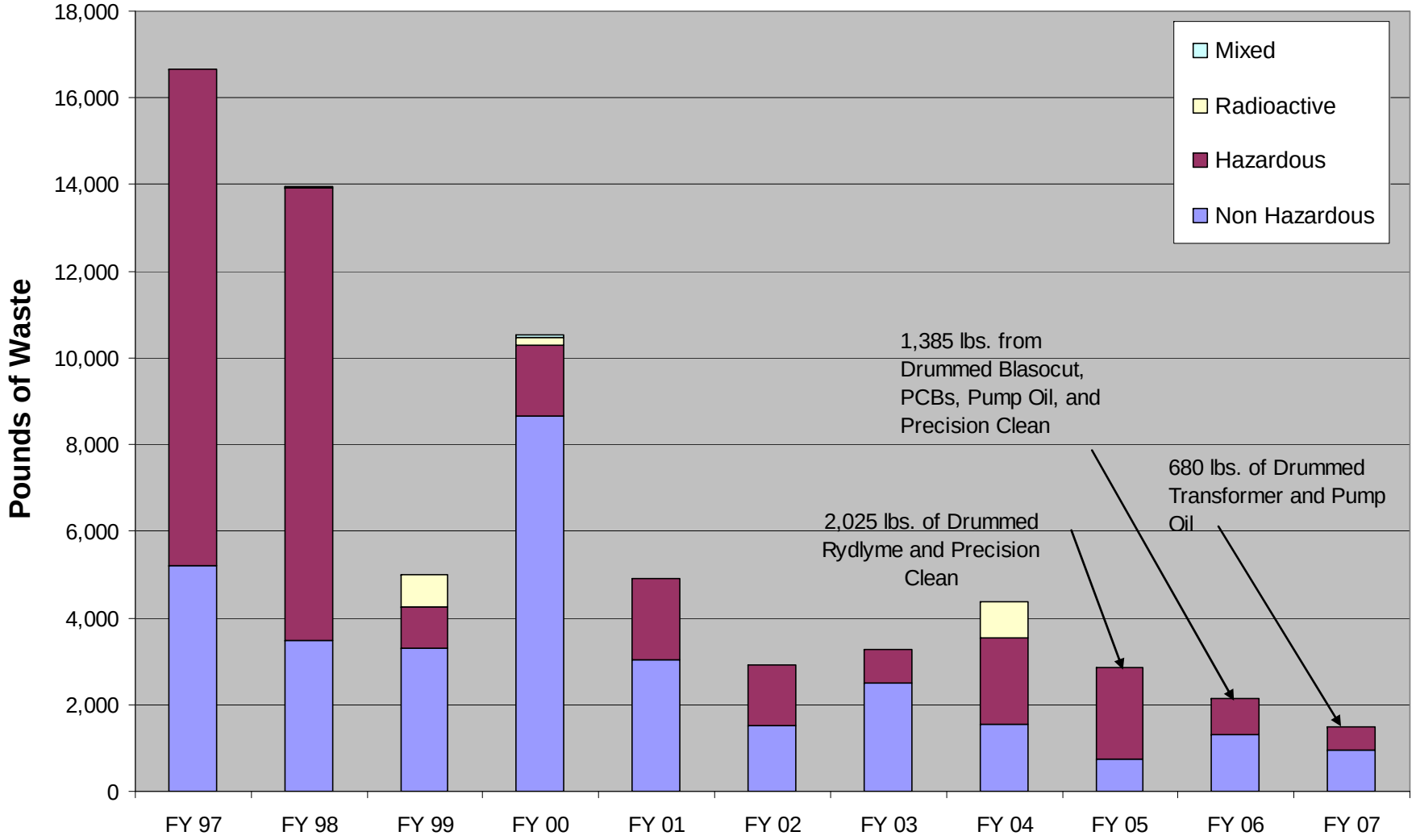




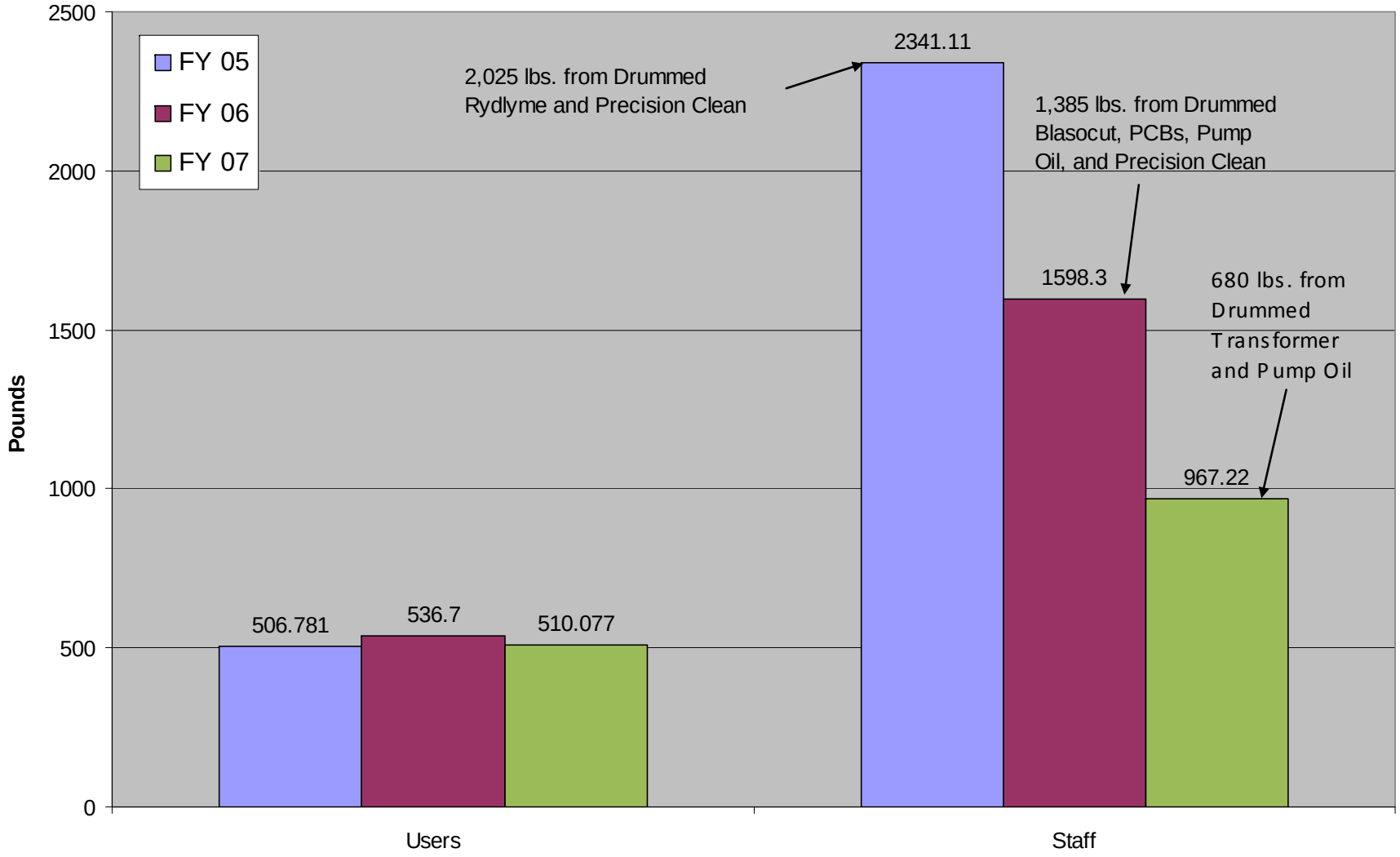
2006 ESH Performance Measures

- Progress on ESH Targets
- Results of assessments and audits
- Tier I
- Traffic violations
- Training
- Injuries
- Incidents
- Radiation exposure
- **Hazardous waste generation**

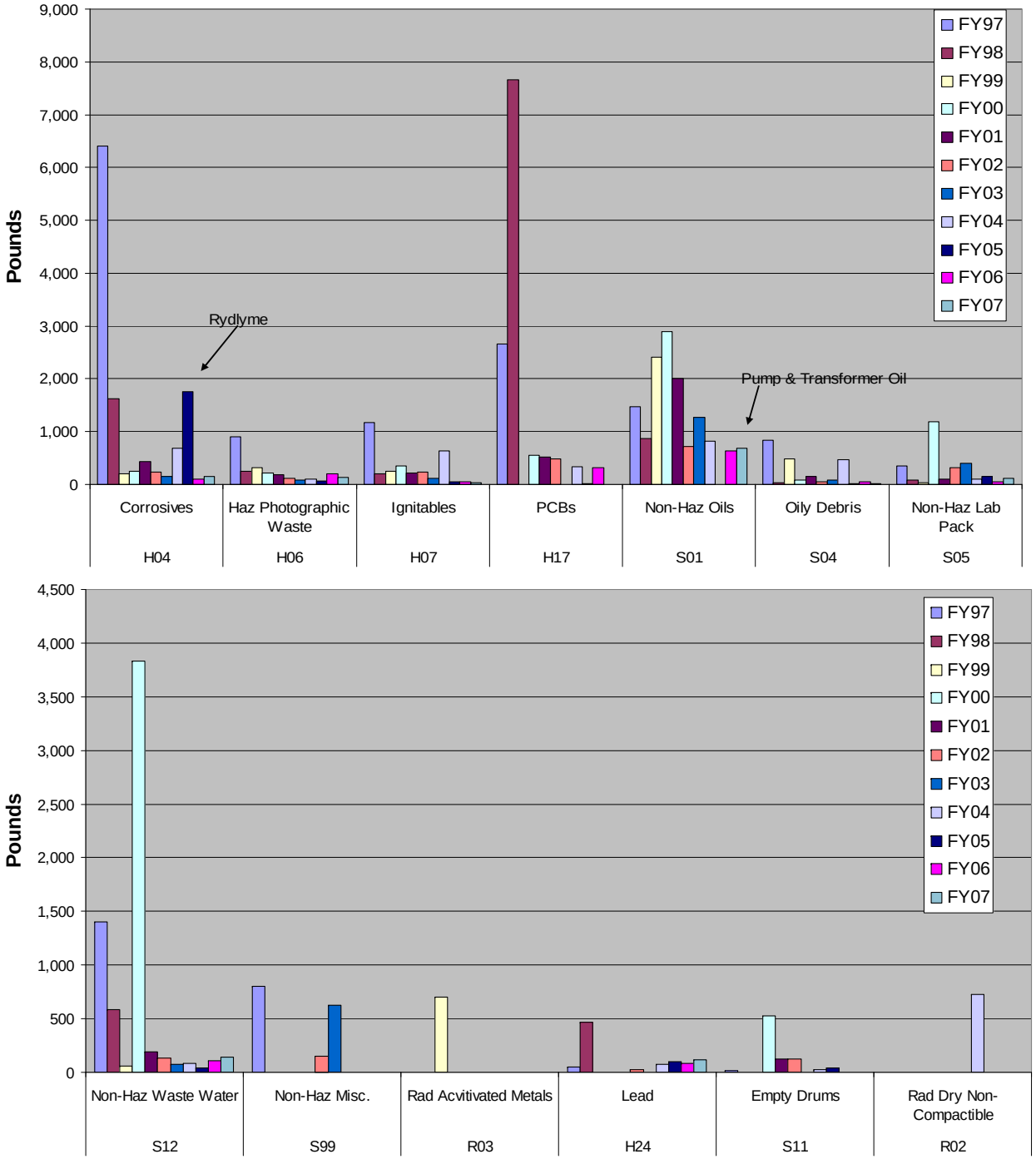
NSLS Waste Totals



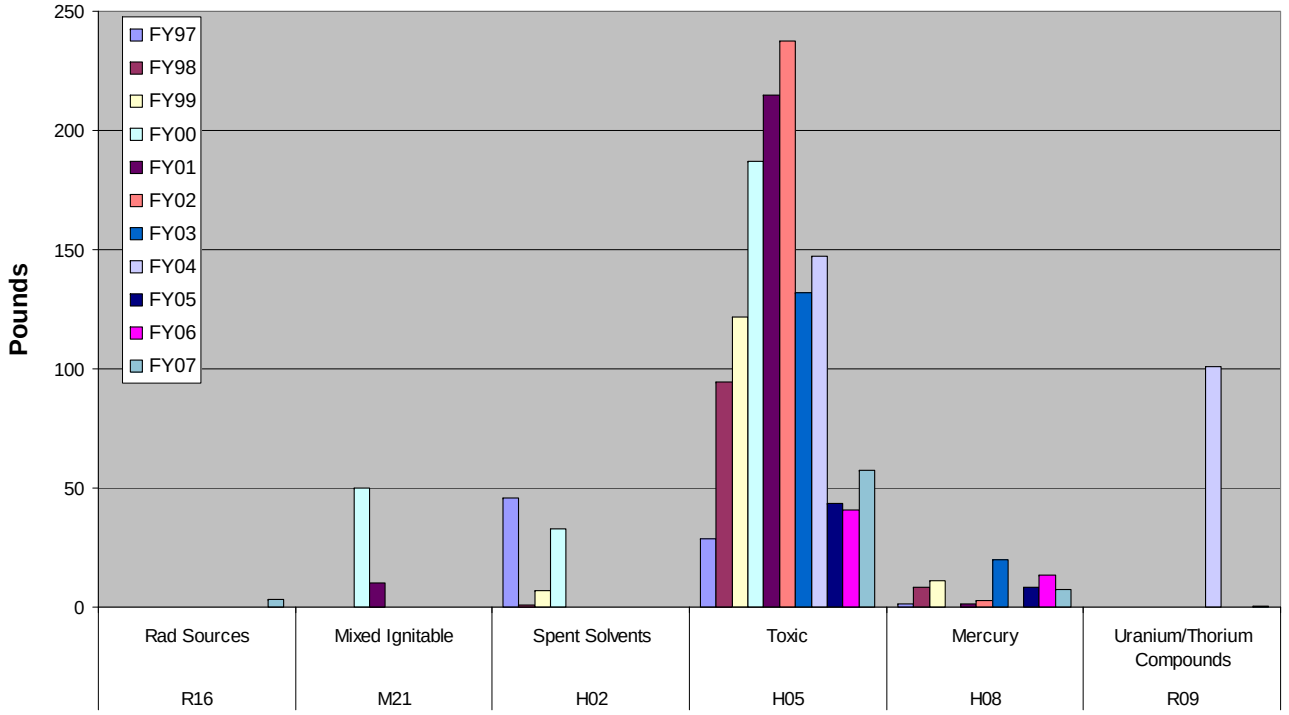
Users vs. Staff Generation Rates

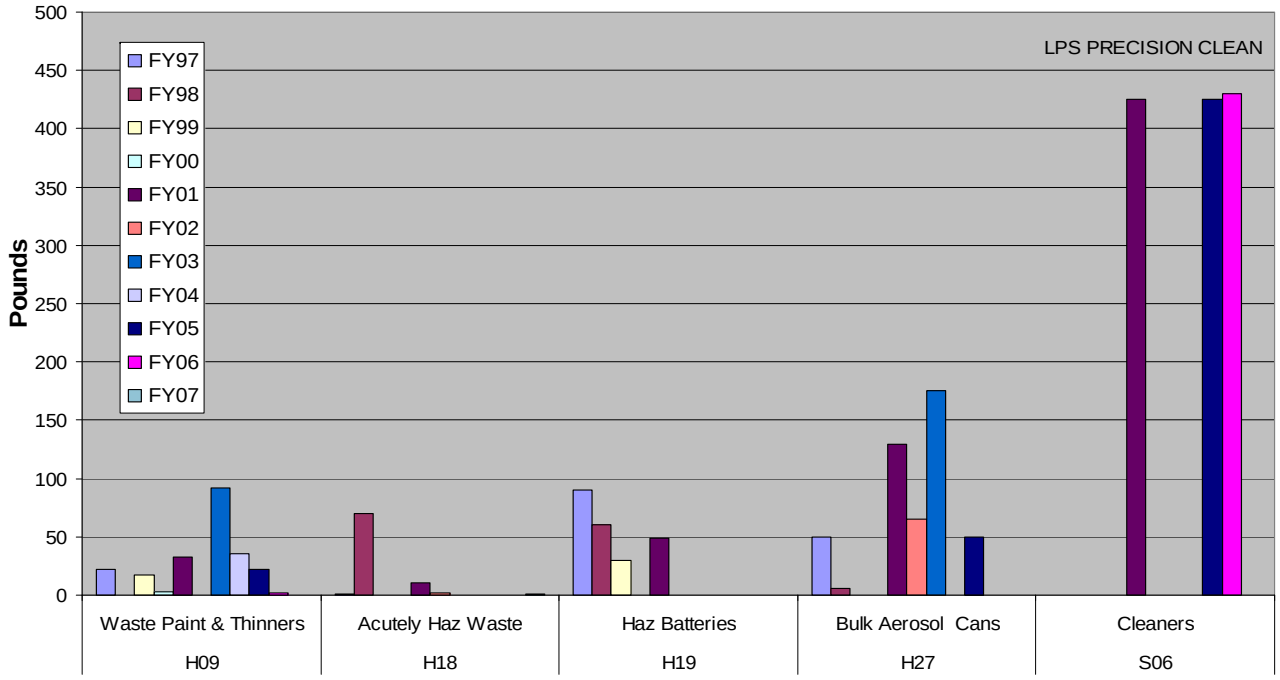


Waste Streams

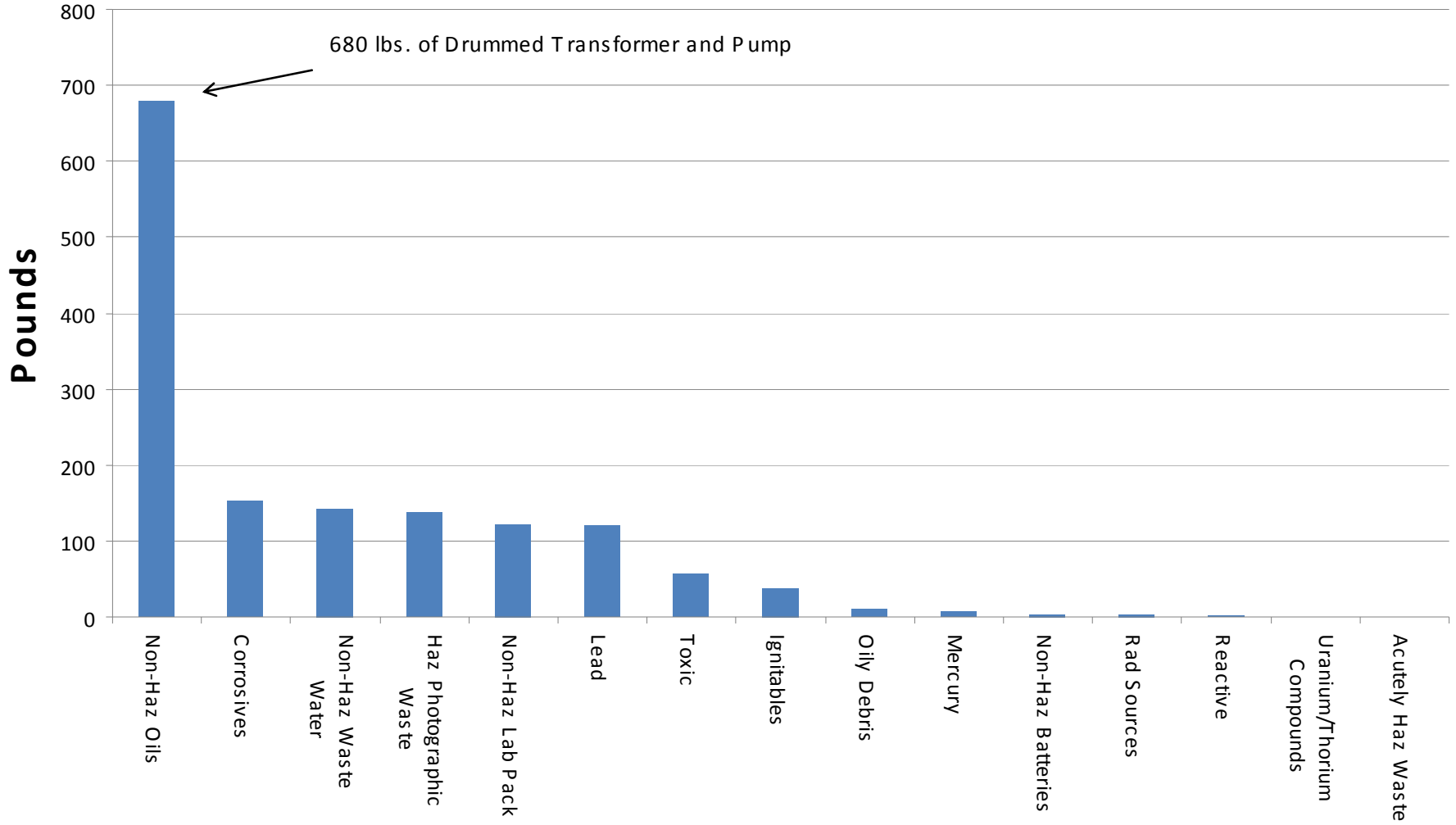


Waste Streams





2007 Waste Streams



Waste Summary

- Excellent tracking and trending allows us to focus on problem items
- Big items have been captured; becoming harder to reduce
- This year: painting lead bricks for reuse

- NSLS ESH Management System
- ESH Performance Measures
- **Stakeholder Involvement**
- Financial Costs
- Targets for FY 08
- Questions / Comments

Stakeholder Involvement
External

Active education program

- Graduate Students (4 full time)
- Summer Students
- University workshop
- X27A Student Webcast

Community Involvement

- “Take Our Daughters and Sons to Work”
- Summer Sunday
- 107 Facility Tours (Office of Education Programs)
- Vibrant, creative web site to tell our story

Summer Students (17 High School and Graduate)

Historically Black Colleges & Universities workshop

X27A Student Webcast; BNL & SBU

- 65 Gelinas Jr. High and Sayville High School students
- Arsenic analysis; soil samples collected near CCA treated deck

“Take Our Daughters and Sons to Work” (30 children)

Summer Sunday

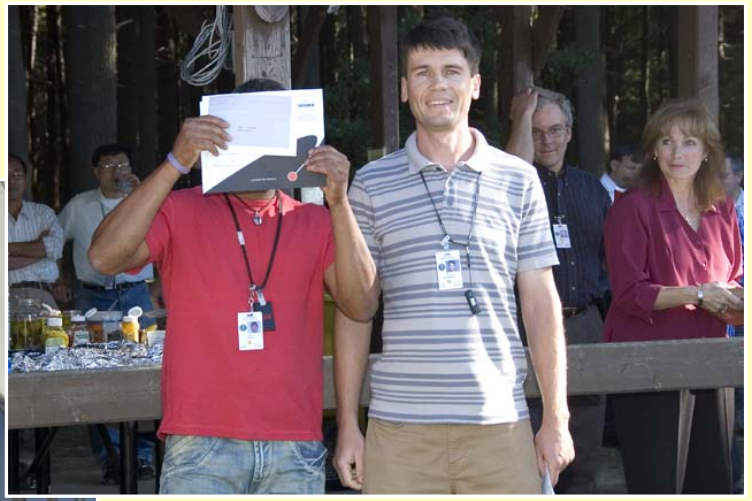
- 65 NSLS volunteers; 700 community visitors
- 14 ‘Hands-on’ displays; toys; floor tour raffles

Stakeholder Involvement
Internal

- ESH presentations at Town Meetings
- ESH prominent at weekly User meetings
- Staff involvement in JRA & FRA development
- ISM Safety Moments
- Staff involvement in ESH committees
  - ESH committee
  - Interlock Working Group
  - ALARA
  - Beam Line Review
  - ESH Improvement committee

Stakeholder Involvement
Staff Recognition

- 1 staff member received Site wide Safety Steward (S3) award & BNL Engineering award
  - Electrical safety
- 2 staff members submitted to S2 program
  - 1 accepted = remote 480 motor starter switch; $3,000
  - Second funded by the department; X-over shielding
- 1 staff member submitted to P2 program
  - Accepted = drum mixer & pH meter; waste reduction
- 10 staff members received Spotlight awards for safety
  - Remote motor starter
  - Personnel protection interlock enhancement; power supply configuration
  - SDL equipment upgrade; fire safety
- User Executive Committee award; community service



- NSLS ESH Management System
- ESH Performance Measures
- Stakeholder Involvement
- **Financial Costs**
- Targets for FY 08
- Questions / Comments

FY 2007 ESH Costs

- Total Direct Cost ~ $620,000

(Not including NSLS ESH salaries)

- RCD Program Costs
  - Personnel Support (~ 2.0 FTE) ~ $240,000
  - Dosimetry ~ $120,000
  - Instrument Calibration and Maintenance ~ $ 20,000
- EMS & OHSAS Implementation Costs
  - Laboratory overhead
    - ECR support ~ 0.3 FTE
    - SHSD support ~0.5 FTE
  - Direct charges for waste disposal ~ $ 55,000
- Misc
  - LDRD, G&A, Common costs ~ $150,000
  - PO's, Travel, Sensitive equip ~ $ 25,000

- NSLS ESH Management System
- ESH Performance Measures
- Stakeholder Involvement
- Financial Costs
- **Targets for FY 08**
- Senior Management Questions

Goals for FY 08

OHSAS/EMS Goals

- Provide Human Performance training for NSLS management, supervisors, and work planning staff
- Achieve zero injuries
- Find one pollution prevention opportunity and seek funding
- Enable Energy Star® features on desktop computer monitors
- Consider Energy Star® or equivalent features for electronic purchases
- Combine the EMS and OHSAS documentation into a single manual.

Goals for FY 08

Other Department Goals

- Continue evaluation of potential for experiment related solvent exposure and soldering related lead and irritant exposure at the NSLS to generate sufficient data to revise policies and practices as needed.
- Improve management of the NSLS wet chemistry laboratories. Define laboratory specific safety envelopes.
- Develop a corrective action plan for findings associated with the FY 2007 DOE Integrated Safety Management audit.
- Track implementation of NRTL inspection program.
- Continue evaluation of beam-loss mechanisms in the booster extraction process and determine if improved extraction efficiencies are achievable.

Goals for FY 08

Other Department Goals (cont.)

- Continue development of web-based JTA questionnaire as a training needs assessment tool.
- Analyze the, “Test Interval Analysis of NSLS Radiological Interlock Systems” report to determine the potential impact on NSLS operations and interlock testing. Define a plan for any required actions that result from that analysis.
- Analyze Tier I findings data and develop a corrective action plan for the most common significant findings.
- Complete ODH risk analysis for cryogen use on the NSLS experiment floor.
- Define NSLS PPE requirements.
- Define individual beam line safety envelopes.

- NSLS ESH Management System
- ESH Performance Measures
- Stakeholder Involvement
- Financial Costs
- Goals for FY 08
- **Questions / Comments**

Please sign the attendance sheet